

ABSTRACT OF THE DISCLOSURE

A wideband erbium-doped optical fiber amplifier is disposed among an optical
5 fiber through which a first and second band-band optical signals (for example, the C-band
and L-band) are transmitted and forms a first optical path and a second optical path parallel
to each other. The wideband erbium-doped optical fiber amplifier comprising a first
amplifying section disposed on the first optical path, including a first erbium-doped optical
fiber to amplify the first-band optical signals, a filter to gain-flatten the amplified first-
10 band optical signals, wherein a reflected portion of the first band optical signal by the
filter is directed to the second optical path; and a second amplifying section disposed on the
second optical path, having a second erbium-doped optical fiber to amplify received
second-band optical signals, wherein the reflected first-band optical signal is used to pump
the second erbium-doped optical fiber.

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